

**Remarks:**

The drawings were objected to for not designated Figures 1A and 1B as Prior Art. Replacement sheets with the designation are included herewith.

Claim 1, 2, 8-10 and 16-20 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Katsuki* in view of *Komatsu*. However, these references do not disclose, teach, or suggest a unitary bearing rail assembly with an array of magnets disposed thereon as now recited in independent claims 1 and 9 and dependent claim 20. For example, *Katsuki*, in Figure 3, shows a motor with the magnets 30, 31 disposed upon vertical walls of parts 28C and 28D of a mounting member 28. The mounting member is shown bolted to a part 22 that exhibits bearing rail surfaces 23. (See *Katsuki*, col. 3, l. 38 – col. 4, l. 23) Thus, the magnets are mounted on a structure that must be bolted to part 22. The magnets are not disposed upon the bearing rail structure, as claimed in the present case. This complicates the construction of the apparatus of *Katsuki*, in comparison to the simple construction of the present invention. As shown in Figure 3 of this application, a single unitary structure holds the magnets and provides the guide rails. This is different from the cited art wherein assembly is required. The present invention greatly simplifies the process of manufacture and use. In the present invention the bearing rail structure which holds the magnets can be machined from one piece of material. The bearing rails and the part that holds the magnets do not have to be assembled together.

*Komatsu* suffers the same deficiency as *Katsuki*. *Komatsu* discloses in Figure 2 stator elements (magnets) 4a, 4b, and 4c on a base 5. Linear guide rails 2 are disposed on base 5, and mate with guides 6. (See *Komatsu*, col. 3, ll. 5-20) The magnets in *Komatsu* are disposed on a base upon which are assembled the linear guide rails 2. What *Komatsu* shows is similar to what is depicted in Figures 1A and 1B where the guide rails and base must be assembled. *Komatsu* does not disclose a unitary bearing rail structure exhibiting a surface upon which an array of magnets is disposed. Rather, the apparatus of *Komatsu* must be assembled from its various parts; an assembly the present invention avoids.

*Hayashi* discloses an armature 23 with flat coils (*Hayashi*, Figure 3) mounted to a base 70 (*Hayashi*, Figure 2A). The magnet frame 21 carries magnets 22 so that the armature lies between oppositely facing magnets 22. (See *Hayashi*, col. 7, ll. 38-46) *Hayashi* does not disclose how the magnet frame moves with respect to armature 23. A rail structure is not shown. *Termachi* discloses track rails 4 bolted to a base 1. (See *Termachi*, col. 3, ll. 11-25.) *Termachi* does not disclose a unitary bearing rail structure with magnets disposed thereon.

Thus, none of the cited art discloses a unitary bearing rail structure with magnets disposed thereon, as now recited in claims 1-17, and 20. The unitary bearing rail structure of the present invention requires no assembly. It is a structure fabricated in one piece. This is not disclosed, taught or suggested by the cited art either alone or in combination.

Claims 17-19 are amended to recite that the core element has windings around it. In contrast, *Katsuki* shows an anti-cogging mechanism comprising a steel plate between coils of the linear motor assembly. (See *Katsuki*, Figure 4.)

Claims 3, 5, 7, 11, 13, and 15 were rejected in view of *Hayashi*. *Hayashi* talks generally about making the various parts of a motor assembly out of materials that exhibit low coefficients of thermal expansion. In contrast, the claims recite that the linear motor coil assembly can exhibit an amount of thermal expansion that greatly exceeds the thermal expansion of a structure that connects the linear motor coil assembly to the bearing block assemblies. This is not taught or disclosed by *Hayashi*.


Claims 4, 6, 12, and 14 were rejected in view of *Termachi*. *Termachi* shows adjusting the clearance between the track rails and bearings by a bolt that functions as a set screw. (See *Termachi*, Figure 2, element 7) In contrast, the claims recite that the bolt holes exhibit a *radial* clearance for adjustment of the bearing blocks. This is not disclosed or suggested by *Termachi*.

## **Conclusion**

For at least these reasons, Applicant believes the application is now in condition for allowance and respectfully requests the same.

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Respectfully Submitted,



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